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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,096	09/15/2006	Sajad Haq	1033963-000031	7835

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BUCHANAN, INGERSOLL & ROONEY PC
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER	
MASKELL, MICHAEL P	

ART UNIT	PAPER NUMBER
2881	

NOTIFICATION DATE	DELIVERY MODE
03/17/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary	Application No.	Applicant(s)	
	10/593,096	HAQ ET AL.	
	Examiner	Art Unit	
	MICHAEL MASKELL	2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 February 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 13-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 13-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/16/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 22 objected to under 37 CFR 1.75 as being a substantial duplicate of claim 21.

Claim Rejections - 35 USC § 112

The cancellation of claims 11 and 12 obviates the previous rejections. The rejections of these claims are withdrawn.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-10 and 21-24 rejected under 35 U.S.C. 102(b) as being anticipated by Sussmann (EP 0440384 A1, cited in IDS, copy present in IFW).

Regarding claim 1, Sussman discloses a radiator comprising a substrate (abstract), an amorphous carbon layer (column 3, lines 17-18) and a metallic carbide-forming layer interposed between the substrate and amorphous carbon layer (abstract).

Regarding claim 2, Sussman discloses wherein the metallic carbide-forming layer comprises titanium (column 2, line 13).

Regarding claim 3, Sussman discloses wherein the amorphous carbon layer and/or the titanium layer has a thickness in the range of 0.1 micrometers to 1.0 micrometers (column 2, lines 42-44).

Regarding claims 4-6, Sussman discloses wherein the amorphous carbon layer is protected by a protective layer comprising at least one of SiC, SiO2, diamond and diamond-like carbon (abstract), and wherein the protective layer is transparent to

infrared radiation (diamond is transparent to infrared radiation).

Regarding claim 7, Sussman discloses a method of making a radiator comprising the steps of forming a metallic carbide-forming layer on a substrate (abstract) and forming an amorphous carbon layer on the metallic carbide-forming layer (column 3, lines 17-18).

Regarding claim 8, Sussman discloses wherein the amorphous carbon layer and/or the metallic carbide forming layer is formed by sputter deposition or evaporation (abstract; column 3, lines 15-23).

Regarding claim 9, Sussman discloses the step of forming a protective layer on top of the amorphous carbon layer (column 3, lines 17-18; the diamond layer is a protective layer on top of the amorphous carbon layer).

Regarding claim 10, Sussman discloses wherein the radiator is annealed after the steps of forming the metallic carbide-forming and amorphous carbon layers (column 2, lines 24-32).

2. **Regarding claims 21 and 22**, Sussman discloses the radiator of claim 2, wherein the amorphous carbon layer is protected by a protective layer.

3. **Regarding claims 23 and 24**, Sussman discloses wherein the radiator is annealed after the steps of forming the metallic carbide-forming and amorphous carbon layers.

4. Claims 1-9, 13, 14, 16, 17, 18 and 20-22 rejected under 35 U.S.C. 102(b) as being anticipated by Blangetti (U.S. Patent Application Publication 2004/0069466 A1).

5. **Regarding claim 1**, Blangetti discloses a radiator comprising a substrate, an amorphous carbon layer (Abstract) and a metallic carbide layer interposed between the substrate and the amorphous carbon layer (paragraph 0028).

6. **Regarding claim 2**, Blangetti discloses wherein the metallic carbide layer comprises titanium (paragraph 0028).

7. **Regarding claim 3**, Blangetti discloses wherein the amorphous carbon layer and/or the titanium layer has a thickness in the range of 0.1 micrometers to 1.0 micrometers (claim 4).

8. **Regarding claim 4**, Blangetti discloses wherein the amorphous carbon layer is protected by a protective layer (Abstract).

9. **Regarding claim 5**, soft amorphous carbon as disclosed by Blangetti is substantially transparent to infrared radiation.

10. **Regarding claim 6**, Blangetti discloses wherein the protective layer comprises diamond-like carbon (paragraph 0012).

11. **Claim 7** is the method of making the radiator of claim 1, and the same rejection is applicable *mutatis mutandis*. The applicant's disclosure shows that metallic and amorphous carbon layers provided as claimed (and as present in Blangetti) inherently creates a high emissivity (applicant's specification, p. 2).

12. **Regarding claim 8**, Blangetti discloses wherein the amorphous carbon layer and/or the metallic carbide forming layer is formed by sputter deposition or evaporation (paragraph 0025).

13. **Claim 9** is the method of making the radiator of claim 4, and the same rejection is applicable *mutatis mutandis*.

14. **Regarding claim 13**, Blangetti discloses a radiator comprising a substrate, a soft amorphous carbon layer (Abstract) and a metallic carbide layer interposed between the substrate and the amorphous carbon layer (paragraph 0028).

15. **Claim 16** is the method of making the radiator of claim 13, and the same rejection is applicable *mutatis mutandis*.

16. **Regarding claims 14 and 17**, the applicant's disclosure shows that metallic and amorphous carbon layers provided as claimed (and as present in Blangetti) inherently creates a high emissivity (applicant's specification, p. 2).

17. **Regarding claim 18**, Blangetti discloses wherein the metallic carbide-forming layer is provided on an integral surface layer of the substrate (paragraph 0028).

18. **Regarding claim 20**, Blangetti discloses wherein the amorphous carbon layer and/or the titanium layer has a thickness in the range of 0.1 micrometers to 1.0 micrometers (claim 4).

19. **Regarding claims 21 and 22**, Blangetti discloses wherein the amorphous carbon layer is protected by a protective layer (Abstract).

Claim Rejections - 35 USC § 103

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

> invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

21. Claims 13, 14, 16, 17, 19 and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Sussman in view of Blangetti, et al (U.S. Patent Application Publication 2004/0069466 A1).

22. **Regarding claim 13**, Sussman discloses a radiator comprising a substrate (abstract), an amorphous carbon layer (column 3, lines 17-18) and a metallic carbide-forming layer interposed between the substrate and amorphous carbon layer (abstract).

The applicant has argued that Sussman's amorphous carbon layer is not "soft." Without conceding this point, the addition of a soft amorphous carbon layer on top of a hard amorphous carbon layer is rendered obvious when Sussman is taken in view of Blangetti.

Blangetti discloses a heat sink comprising a substrate coated with a hard amorphous carbon layer and then a soft amorphous carbon layer on top of the hard one. Blangetti teaches that this arrangement allows for dropwise condensation and protects from impingement erosion (Abstract). By simply adding a soft amorphous carbon layer on top of Sussman's ostensibly hard amorphous carbon layer, one of ordinary skill in the art would be able to easily gain the advantages taught by Blangetti. It would therefore have been obvious to one of ordinary skill in the art to add a soft amorphous carbon layer on top of Sussman's amorphous carbon layer, resulting in the claimed configuration.

23. **Claim 16** is the method of making the radiator of claim 13, and the same rejection is applicable *mutatis mutandis*.

24. **Regarding claims 14 and 17**, Sussman discloses use as a heat sink as one application, which is a high emissivity radiator. Further, the applicant's disclosure shows that metallic and amorphous carbon layers provided as claimed (and as present in the obvious combination) inherently creates a high emissivity (applicant's specification, p. 2). Note that the attainment of this high emissivity is not the reason for combining the references in the rejection of claim 13, and so no hindsight is used in the combination.

25. **Regarding claim 19**, Sussman discloses wherein the metallic carbide forming layer is provided as a separate layer on a surface of the substrate (column 1, lines 40-49).

26. **Regarding claim 20**, Sussman discloses the radiator of claim 2, but fails to teach wherein the amorphous carbon layer and/or the titanium layer has a thickness in the range of 0.1 micrometers to 1.0 micrometers; however, the soft amorphous carbon layer that Blangetti shows to be obvious to apply to Sussman's radiator in re claim 13 above has a thickness in said range (claim 4 of Blangetti).

Response to Arguments

27. Applicant's arguments filed 02/19/2009 have been fully considered but they are not persuasive. The applicant has argued that Sussman's invention is not analogous to the radiator as recited in the applicant's claims because "the coated surface is not intended to dissipate heat through radiation or other known means" (reply filed 02/19/2009, p.7). First, this statement of intended use is not relevant to an anticipation rejection under 35 USC 102(b), because all of the structural limitations of the claim have

been shown to be present and arranged in the same way in Sussman, and a claim to a device is defined by what the device *is* (i.e. the structural limitations) rather than by what it *does* (MPEP 2114). Second, Sussman discloses that the substrate can be used as a heatsink, and, as the applicant recognizes (p. 7 of reply), Sussman's surface conducts heat away from a hot component. Basic thermodynamics shows that a substrate heated in this way will inherently radiate thermal energy, whether intended or not.

The applicant has further argued that Sussman's "amorphous or diamond-like carbon" is not analogous to applicants' claimed amorphous carbon. The fact remains that Sussman discloses "amorphous carbon" arranged in the same way as claimed. If the applicant believes that the amorphous carbon of the present invention is in some way different than Sussman's amorphous carbon, such a difference must be claimed to distinguish from Sussman. One such alleged difference (the "soft" characteristic of the amorphous carbon) has been incorporated in new independent claim 13. Though the examiner does not concede that Sussman's amorphous carbon is not "soft," new grounds of rejection have been entered above showing the addition of a soft amorphous carbon layer on top of a hard amorphous carbon layer to be obvious.

Conclusion

28. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL MASKELL whose telephone number is (571)270-3210. The examiner can normally be reached on Monday-Friday 8AM-5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on 571/272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael Maskell/
Examiner, Art Unit 2881
12 March 2009

/ROBERT KIM/

Supervisory Patent Examiner, Art Unit 2881